Giorgio Careri: A physicist in the life sciences

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Physics provides the foundation and the fundamental understanding of biology. Schrödinger implied this belief in his beautiful book “What is life?”, a book that is loved by physicists and hated by some (many?) biologists. Few biologists move into physics, but many physicists move to biology as can be inferred for instance from the growth and size of the Biological Physics section of the American Physical Society. There are two routes from physics to the life sciences. Some establish their reputation in physics and at some point see the light and switch to the life sciences. Some study and absorb physics and then quickly move. Some examples of the first route are Max Delbrück and John Hopfield. Francis Crick belongs to the second class.

Giorgio Careri was a member of the first class. His early work centered on statistical physics and liquid helium, but he became interested in the physics of proteins. Careri was one of the first to realize the importance of physics to biology and of biological systems to physics. Inspired by his liquid-state research, he explored the physics of the hydration shell of proteins, both experimentally and theoretically. His search for solitons in biological systems did not pan out, but his work on lysozyme has stood the test of time. The use of percolation theory provided physical insight into proton motion on the protein surface. While his imaginative original work has been largely overlooked, his reviews, written often in collaboration with John Rupley, have had considerable impact and are continuously used. His studies of the role of water in biological systems are classics and will remain signposts for future work.

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